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MCRD PARRIS ISLAND
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LETTER AND COMMENTS FROM SOUTH CAROLINA DEPARTMENT OF HEALTH AND
ENVIRONMENTAL CONTROL REGARDING REMEDIAL INVESTIGATION/FEASIBILITY
STUDY REPORT FOR SITE 45 MCRD PARRIS ISLAND SC

8/9/2011

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

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Promoting and protecting the health of the public and the environment

August 9, 2011

Commanding Officer
NAVFAC Southeast
ATTN: Mr. Charles Cook, P.E.
PO Box 30
Ajax Street North, Bldg 135
Jacksonville, Florida 32212

RE: Review
Site 45 RI/FS
Marine Corp Recruit Depot (MCRD)
Parris Island
SC6 170 022 762

Dear Mr. Cook:

The Division of Waste Management of the South Carolina Department of Health and Environmental Control (Department) completed the review of the above referenced report received June 23, 2011. The Department reviewed the document with respect to applicable sections of the South Carolina Hazardous Waste Management Regulations (SCHWMR). Based on this review the Department has the attached comments.

The Department expects to see a response to comments (RTCs) which addresses the attached comments and change pages submitted for comments in the revised Site 45 RI/FS Report. The Department's review is based on the information presented by MCRD to date; any information found to be contradictory may require further action. If you have any questions regarding this issue, please contact me at (803) 896-4218.

Sincerely,

Meredith Amick, P.E., Environmental Engineer
Corrective Action Engineering Section
Division of Waste Management

cc:

Tim Harrington, MCRD Parris Island
Annie Gerry, Hydrogeology
Priscilla Wendt, SCDNR
Russell Berry, EQC Region 8, Beaufort

Lila Llamas, EPA Region 4
Mark Sladic, P.E., TtNUS
Lisa Donohoe, MCRD Parris Island

Engineering Memo
Prepared by Stacey French
Marine Corp Recruit Depot (MCRD)
August 9, 2011

Review of Response to Comments from Meredith Amick 3/22/10:

1. General Comment 1: The response did not adequately address the comment. In order to address the comment and to clarify the RI/FS report for the administrative record, a revised CSM, with similar format to Figure 2.2 in the Site 3 ROD, should be submitted as part of the FS. There have been several supplemental investigations / pilot studies conducted since data was collected for the RI. In order to clarify the timeline, the Department recommends adding an Executive Summary to the beginning of the FS section to capture the current site status. This should complement the revised CSM. The CSM should include at a minimum the following:
 - a. Lables showing :
 - i. The former dry cleaning building
 - ii. The current dry cleaner building
 - iii. The sewer line (both former and current, along with the discharge point in the marsh)
 - iv. Building 293
 - v. Site 45 and Site 32
 - b. The release scenario for the soil and groundwater contamination. This should include site 45 and 32 as well as the intercept and transport of contamination via the sewer line.

Additional Comments to the RI:

2. As discussed at the most recent MCRD Tier I team meeting (July 19 – 20, 2011), the Department needs additional detail regarding the location of structures at Site 45. The Executive Summary Section referenced above, should include a Figure clearly labeling the following:
 - i. The former dry cleaning building
 - ii. The current dry cleaner building
 - iii. The sewer line (both former and current, along with the discharge point in the marsh)
 - iv. Building 293
 - v. Site 45 and Site 32
3. Section 6.1.1 page 6-1: This section states that Building 293 is the only building at Site 45. However the figures show that plume is not under Building 293. Section 6.1.2 states that Building 293 is not part of Site 45, but does however, lie within 100 feet of the groundwater plume. This discrepancy should be clarified in the text.

4. Section 6.4, page 6-12: The first bullet on the page mentions that the changes proposed to be made to the storm water drains at the site may influence the groundwater flow directions unexpectedly. Based on discussions in Partnering Team meetings, the Department understands that the MCRD is pursuing slip lining the storm sewer in the vicinity of Site 45 as a separate project. The Department agrees with the statement from the RI that the groundwater flow may be impacted by this project. A discussion of the slip lining, and long with a discussion of the impact (or potential impact) to the plume should be discussed in the FS.

Additional Comments to the FS:

5. Section 1.2.2.9, page 1-10: This section states that the results of the USGS investigation have not been finalized; however the information was presented in an Appendix. Please revise the text to reference Appendix A.
6. Section 1.2.3.1, page 1-11: The third paragraph states that the horizontal and vertical extent of soil contamination was not delineated. The soil remedial options should include confirmation soil samples to ensure that the contamination is addressed adequately.
7. Section 1.2.4.2, page 1-14: The final sentence of the section indicates that the storm sewer intercepts and removes a portion of the groundwater plume. Please refer to comment 4 above.
8. Section 4.3.2.1, page 4-19: The first bullet under Component 4 recommends prohibition of all uses of groundwater from the surficial aquifer. For clarity, add the depth of to the surficial aquifer.
9. Table 5-1: Please clarify the statement that Alternative S-2 would be more effective than S-3.



C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MEMORANDUM

TO: Meredith Amick, Engineering Associate
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Annie M. Gerry, Hydrogeologist
Federal Facilities Groundwater Section
Division of Waste Management
Bureau of Land and Waste Management

DATE: August 8, 2011

RE: Marine Corps Recruit Depot
SC6 170 022 762

**Review of Remedial Investigation (RI) Addendum and Feasibility Study (FS)
Report for Site 45- Former Morale, Welfare and Recreation Dry Cleaning
Facility, Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina
dated June 2011**

The above referenced document has been reviewed with respect to the conditions of the Federal Facility Agreement (FFA) that the Department entered into with the Navy and EPA Region 4 in January 2005. Site 45 is a former dry cleaner where in March 1994, a tetrachlorethene (PCE) spill of unknown quantity was released into soil near the above ground PCE storage tanks in the northern portion of Site 45. A new dry cleaning facility was constructed in 1997, and operations were switched to a non-hazardous hydrocarbon-based cleaner instead of using PCE. However, in 2005, a second groundwater plume of chlorinated solvents was discovered near the new dry cleaner. The two plumes of contaminated groundwater are intermingled. An RI Addendum for Site 45 has previously been submitted to the Department (January 2010) and comments to the Navy were submitted from the Department (3/22/2010). The Navy responded to these comments in the above referenced document (RI/FS dated June 2011). The purpose of this document is to provide more detail of Site 45 in the RI Addendum and then to provide the formulation and evaluation of remedial alternatives for contaminated soil and groundwater at Site 45 in the FS report.

Based on review of this document, the following comments have been generated.

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COMMENTS

1. The Department agrees to the Response to Comments (RTCs) on comments 1 through 4, and 6 through 11. The Department does not agree with the responses for comments 5, 12, and 13 dated 3/22/10 in this document.

A. The Department's original comment #5

Please indicate the diameter of the large hollow-stem augers. In addition, please explain why a mud rotary was used.

Navy Response: Based on regional experience, the drilling subcontractor felt that mud rotary would be more effective for advancing the well boring through the set-in-place casing to install the actual well. The large hollow-stem augers were 10" OD. The following text was added to the last paragraph of page 3-4.

"Based on regional experience, the drilling subcontractor felt that mud rotary would be more effective for advancing the well boring through the set-in-place 6-inch casing to install the actual well."

Department Response: The response does not provide adequate technical detail as to why mud rotary was used to drill these wells. It is understood that a local drilling contractor will have experience installing wells in the geology encountered at the MCRD. However, appropriate well installation methods should be based on site-specific conditions. The Department's comment on this topic was aimed at learning what site-specific conditions at Site 45 required the use of mud rotary.

The MCRD should clarify the response to provide a technical discussion of why mud rotary was used.

B. The Department's original comment #12

A groundwater sampling schedule needs to be implemented immediately at this site. In order for the Department to comment on the FS, more data will need to be collected. Therefore, MCRD should begin sampling every well on a quarterly basis until the FS is completed for: SVOCs, VOCs and TAL Metals. In addition, please collect MNA parameters, such as pH, ORP, DO as well.

A quarterly groundwater sampling schedule should be instituted no later than June 2010.

Navy Response: The FS is complete and presents several alternatives that include groundwater monitoring. If the partnering team sees fit, groundwater monitoring could be implemented prior to the implementation of the remedial alternatives that will be selected in the FS process, but that decision has not been made as of this time.

Department Response: This response is unacceptable. A groundwater monitoring program needs to be established in order to build a sufficient data set that can be

used for remedy selection and further assessment of the plume since it is not assessed completely (See Comment 13). In addition, this response contradicts the Navy's response to EPA General Comment # 11 (4/19/2010) which the Navy agreed to sample all wells to establish a baseline prior to implementing a chosen remedial alternative.

In addition, the response to Comment #4 in the RI Addendum discussed pilot testing being conducted at Site 45, which could be the cause for contaminant variability. The Department needs to understand how the site is being affected by the pilot tests that are being implemented at Site 45. SC DHEC requests that the Navy provide a discussion to explain this.

C. The Department's original comment #13

Based on groundwater sampling results, it appears that the groundwater plume is not defined both horizontally and vertically. At this point in time, the Department will not require additional assessment of the vertical extent of contamination. Further evaluation of the need for additional deeper wells will be completed after additional groundwater data is collected (as discussed in Comment #12). Monitoring wells are needed in the Northeast, Northwest, Southeast and Southwest quadrants....

Navy Response: The data in this RI/RFI Addendum Report is from the Addendum investigation only. The remainder of the previously collected data was presented in the RI/RFI Report, and included wells at all of the above locations. The FS considers the data from the RI/RFI Report and the RI/RFI Report Addendum when presenting possible remedial alternatives.

Department Response: This response is unacceptable since it did not address the Department's concerns. Because the plume is undefined, additional monitoring wells will be required to define the extent of contamination.

Additional Comments for the RI

2. A number of pilot studies have been performed at Site 45 by agencies other than the Navy such as the USGS study referenced in this report, as well as studies through the Environmental Security Technology Certification Program (ESTCP). While the Department typically supports such outside studies, it is concerned with the potential effects these studies have had on the nature and extent of groundwater contamination. The Department received an email dated October 8, 2010 (from Andrea Leeson) from Environmental Resources Management (ERM) along with an attached document entitled *DEMONSTRATION OF PHYTATE STABILIZATION OF HYDROGEN PEROXIDE WORK PLAN* requesting approval to complete another pilot study.

Given the history of Site 45 and the fact that these other studies have been done at the site, the Navy should incorporate the data and results from these studies into a comprehensive report of current conditions for Site 45. Specifically, this report should

consider the potential impacts on plume movement and geometry. This report should then be used to determine the most appropriate locations for additional monitoring wells at Site 45. Once this comprehensive report is submitted, the Department will then review work plans that are requesting approval to conduct work/research at Site 45.

During review of figures included in the other studies conducted at Site 45, the Department has noticed that the groundwater plume is depicted in at least three different configurations. The Navy is referred to Figure 2B in the ERM Workplan (dated 10/8/2010), Figure 12 in the USGS Report and Figures 4-3 through 4-8 in the FS (June 2011) which depicts four different plumes. Each of these figures depict different plume geometries. It is understood that different data sets may have been used to prepare these figures. Still, given the significant differences in these figures, it does draw into question whether Site 45 is fully understood with respect to source area(s) and release history. Therefore, in the report on current conditions noted in the comment above, the Navy should include a revised Conceptual Site Model. The Conceptual Site Model (CSM) should demonstrate a thorough and complete understanding of Site 45.

3. Although Figures 4-5 through 4-15 show the contaminants in the groundwater, the Department requests isoconcentration maps be provided. The RI does not need to be revised but the Department requests that isoconcentration maps be provided in the revised FS.
4. Figures 4-1 and 4-2 (Select Groundwater Parameter Concentrations) in the RI do not adequately depict the storm sewer as stated in the legend. A revision to the RI is not necessary but this error should be corrected in the FS and all future figures submitted to the Department.

Additional Comments for the FS

5. **Page 1-10, Section 1.2.2.9-Supplemental Groundwater Studies-** This section states that the USGS began an investigation at Site 45 in 2007 by collecting data but the results of the investigation have not been finalized. This is incorrect since the published paper, 'Vroblecky, D.A. et al, 2009. *Source, Transport, and Fate of Groundwater Contamination at Site 45, Marine Corps Recruit Depot, Parris Island, South Carolina: U.S. Geological Survey Scientific Investigations Report 2009-5161, 80 p.*' is referenced and provided in this document (Appendix A). Please revise this section.
6. The FS included an evaluation of five remedial options for groundwater. However, it was noted that groundwater Pump and Treat Technology was not discussed as a potential remedy at this site. The Department acknowledges that pump and treat alone may not be a viable cleanup alternative for Site 45. However, it could still play a positive role in the overall corrective action for the site. Specifically, pump and treat should be considered for areas in which it is necessary to control, and potentially reverse, plume movement. Therefore, the Department requests that Pump and Treat be evaluated as a remedy in the revised FS.

7. **Table 2-4- Cleanup goals-Groundwater Site 45 Feasibility Study-** In the table it states "*1,1- DCE was not included as a COC in the FS because all concentrations were less than the MCL.*" 1,1-DCE is a breakdown product of PCE and TCE. Therefore, 1,1-DCE needs to be retained as a COC and included in the groundwater monitoring program.
8. **In Appendix A- USGS Report: Source, Transport, and Fate of Groundwater Contamination at Site 45, Marine Corps Recruit Depot, Parris Island, South Carolina, Page 18, first paragraph,** the text reads, "*The source of the petroleum hydrocarbons is not known. Some of the benzene detections were slightly greater than the 5-µg/L MCL established by the USEPA.*"

Since BTEX compounds were detected in some of the samples (PAI-45-USGS-TW65 of 5.36 ppb and PAI-45-MW27-SL of 6.01 ppb) the source of these compounds is undefined. The source of the BTEX compounds must be determined as soon as possible.

Should you have any questions regarding this memo, please contact me via email at GerryAM@dhec.sc.gov or by phone at (803) 896-4018.



C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MEMORANDUM

TO: Meredith Amick, Environmental Engineering Associate
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Kent Krieg, Risk Assessor
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

KMK

DATE: August 8, 2011

RE: Marine Corps Recruit Depot
Parris Island, South Carolina

Document:

*Remedial Investigation Addendum and Feasibility Study Report for
Site/SWMU 45 - Former MWR Dry Cleaning Facility
Dated June 2011*

The above referenced document by Tetra Tech NUS, Inc. has been reviewed. The Department has the following risk related comments:

General Comments:

1. Based on discussions at Partnering Team Meetings, the Department understands that 'the need for an ecological risk assessment may be reconsidered' for Site 45 based on the outcome of the Site 14 investigation. Although this issue has been discussed throughout the RI/FS document, the Department requests that the FS be changed to clearly state that the potential impact of the discharge to the marsh will be investigated as part of Site 14.
2. The Department is interested if the Navy has discussed using the MCAS facility background data values, dependent upon applicability of similar soil types, etc (similar to what is being done with Site 5), to compare the arsenic values for a possible removal as a COC. If this comparison is possible, discussion would need to be included within the FS text to justify the soil similarities, etc. The Department would suggest this comparison as a means to assist in the selection (or non-selection) of remedial alternatives.

For example: If the arsenic value is comparable with the MCAS soil and background level, based on the selected groundwater remedial alternative(s) selected, the possible further removal/remediation of arsenic would not be necessary.

3. Throughout the FS, it states that SCDHEC has a cancer target risk level of 1.0×10^{-5} . The Department does not have a selected risk level but follows the USEPA RAGS cancer risk range of 1×10^{-6} to 1×10^{-4} . When the cumulative current or future baseline cancer risk for a medium is within the range of 10^{-6} to 10^{-4} , a decision about whether or not to take action is a site-specific determination. Please correct this statement through the FS where necessary.

Further, the Department suggests that the development of the RAO and Cleanup Goals be done through consensus among the partnering team, rather than based on this incorrect SCDHEC target risk level of 1.0×10^{-5} .

4. The Department did not see the calculations used for Table 2-3 in the document. Specifically, the Department questions if all of the input values used to calculate the soil cleanup goals are still valid due to the long duration of the site investigation and between the CERCLA phases/documents.

If you need any further information, feel free to contact me at (803) 896-4262.